

Fig. 2

The diagram illustrates a beam transport system, labeled 300. A beam of particles, represented by horizontal arrows, enters from the left. It passes through a series of four quadrupole magnets, labeled 301, 303, 305, and 309, which are arranged in a sequence. The beam then passes through a central region, labeled 308, which is an irregularly shaped area. The beam is focused and then defocused as it travels through the system. The entire assembly is enclosed in a rectangular frame.

Fig. 3A

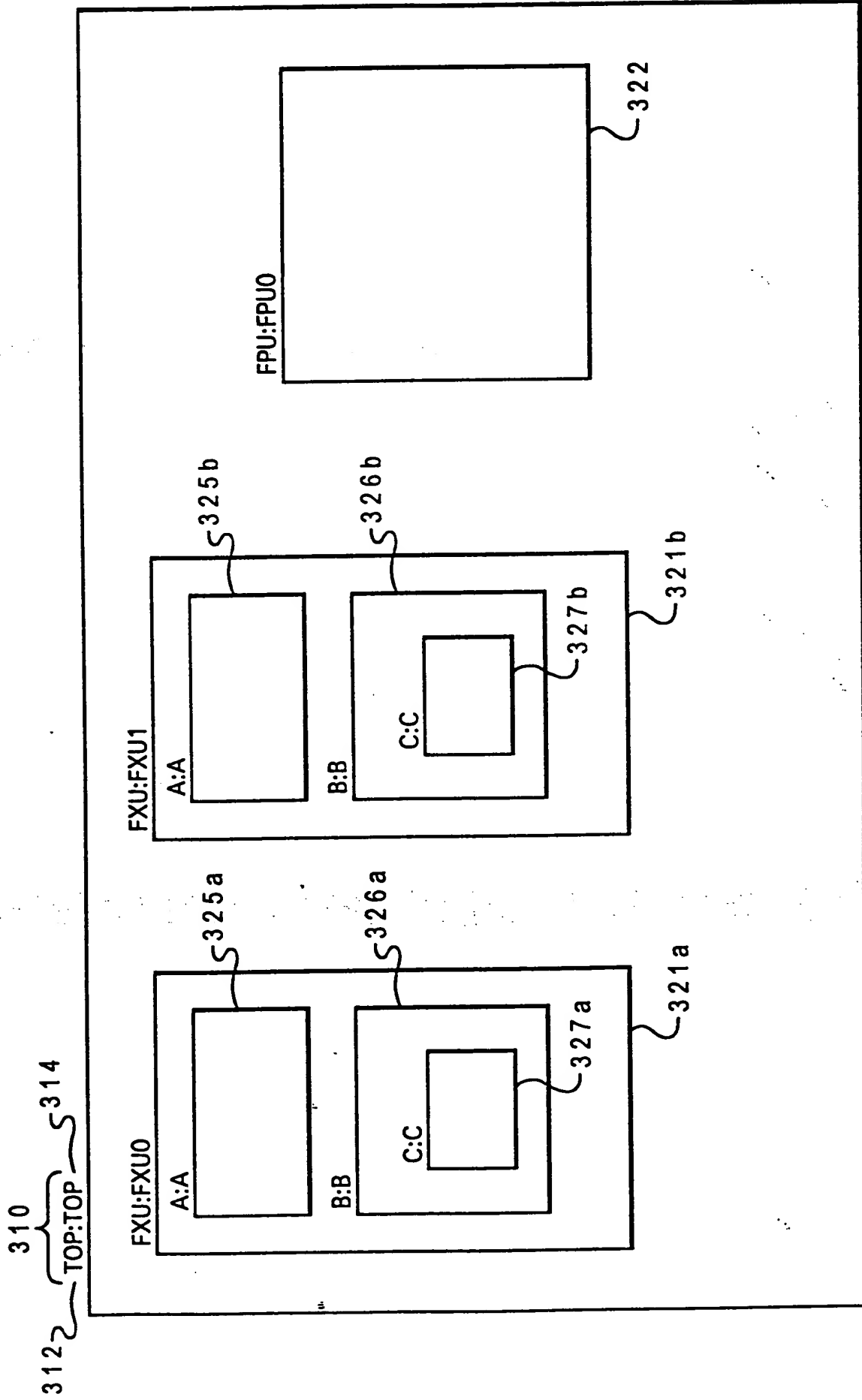


Fig. 3B

```
graph TD; 345([Design Entity Proto Files]) --> 342[342 HDL Compiler]; 340([Design Entity HDL Files]) --> 342; 342 --> 344([344 Design Entity Proto Files]); 342 --> 341([341 Design Entity Proto Data Structures]); 342 --> 343([343 Design Entity Instance Data Structures]); 341 --> 346[346 Model Build Tool]; 343 --> 346; 346 --> 348([348 Simulation Executable Model]);
```

The flowchart illustrates the design flow. It begins with two input components: **Design Entity Proto Files** (labeled 345) and **Design Entity HDL Files** (labeled 340). Both inputs feed into the **HDL Compiler** (labeled 342). The HDL Compiler then outputs three components: **Design Entity Proto Files** (labeled 344), **Design Entity Proto Data Structures** (labeled 341), and **Design Entity Instance Data Structures** (labeled 343). The **Design Entity Proto Data Structures** (341) and **Design Entity Instance Data Structures** (343) feed into the **Model Build Tool** (labeled 346). Finally, the **Model Build Tool** (346) outputs the **Simulation Executable Model** (labeled 348).

iii.

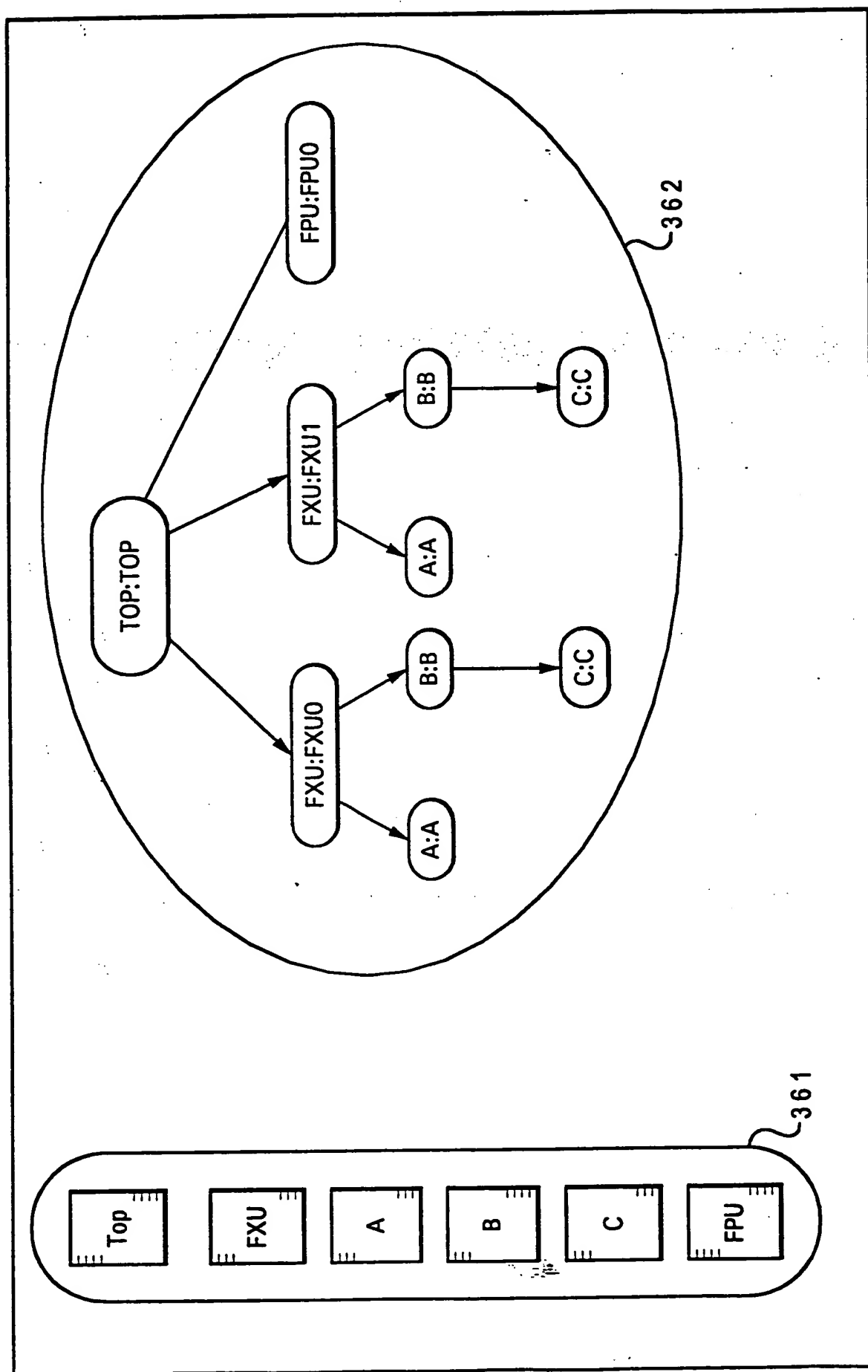


Fig. 3D

Fig. 4A

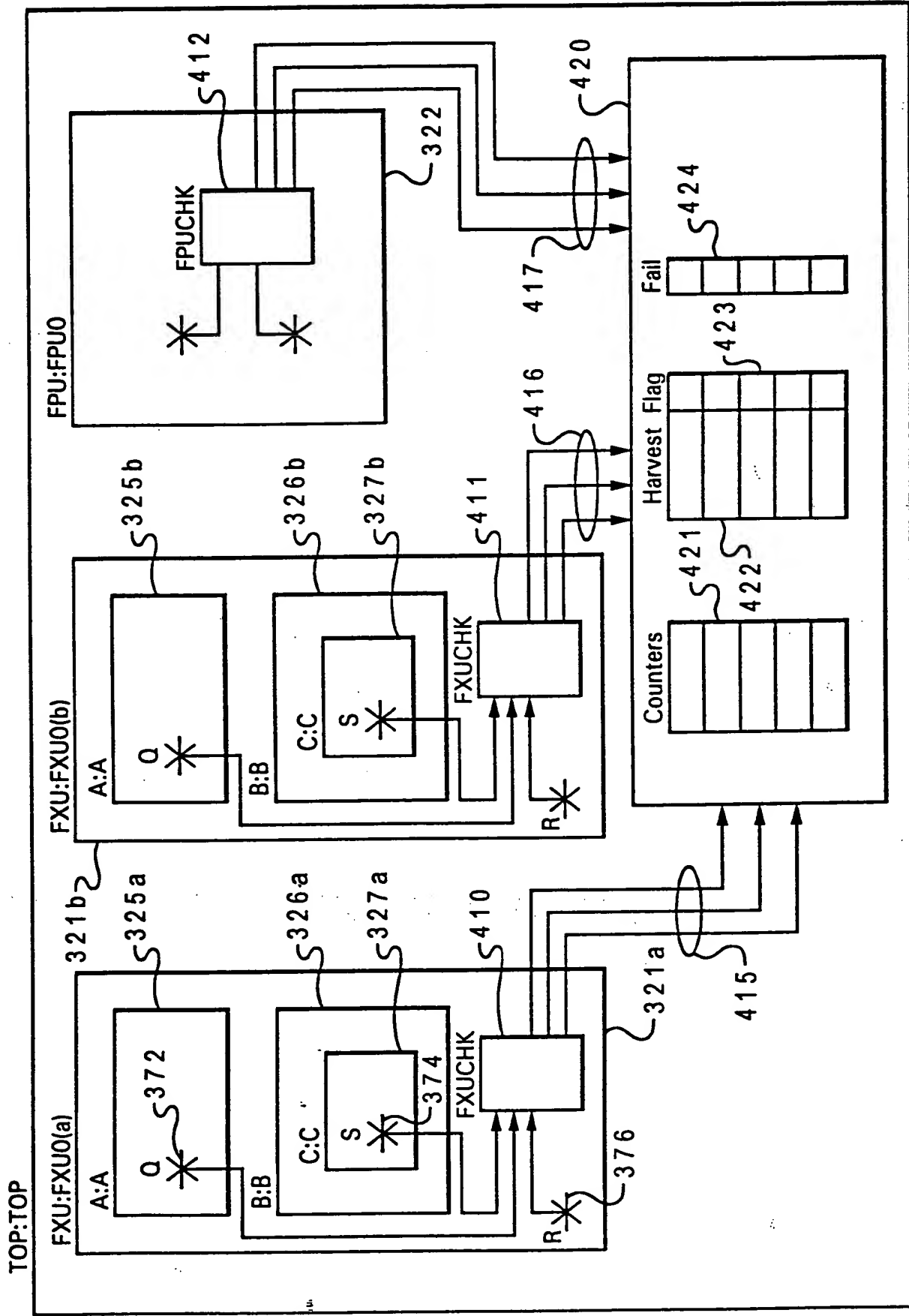
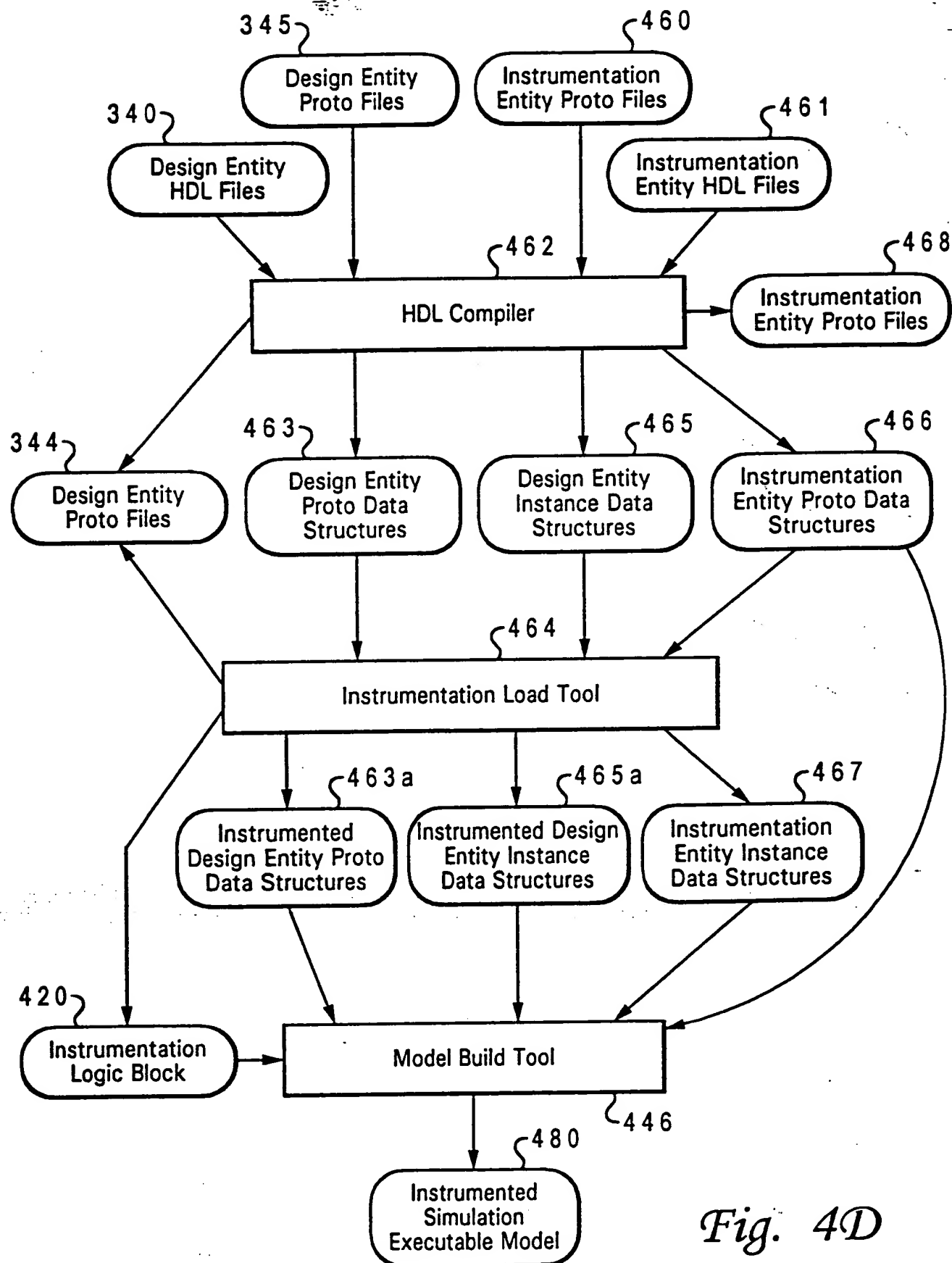


Fig. 4B



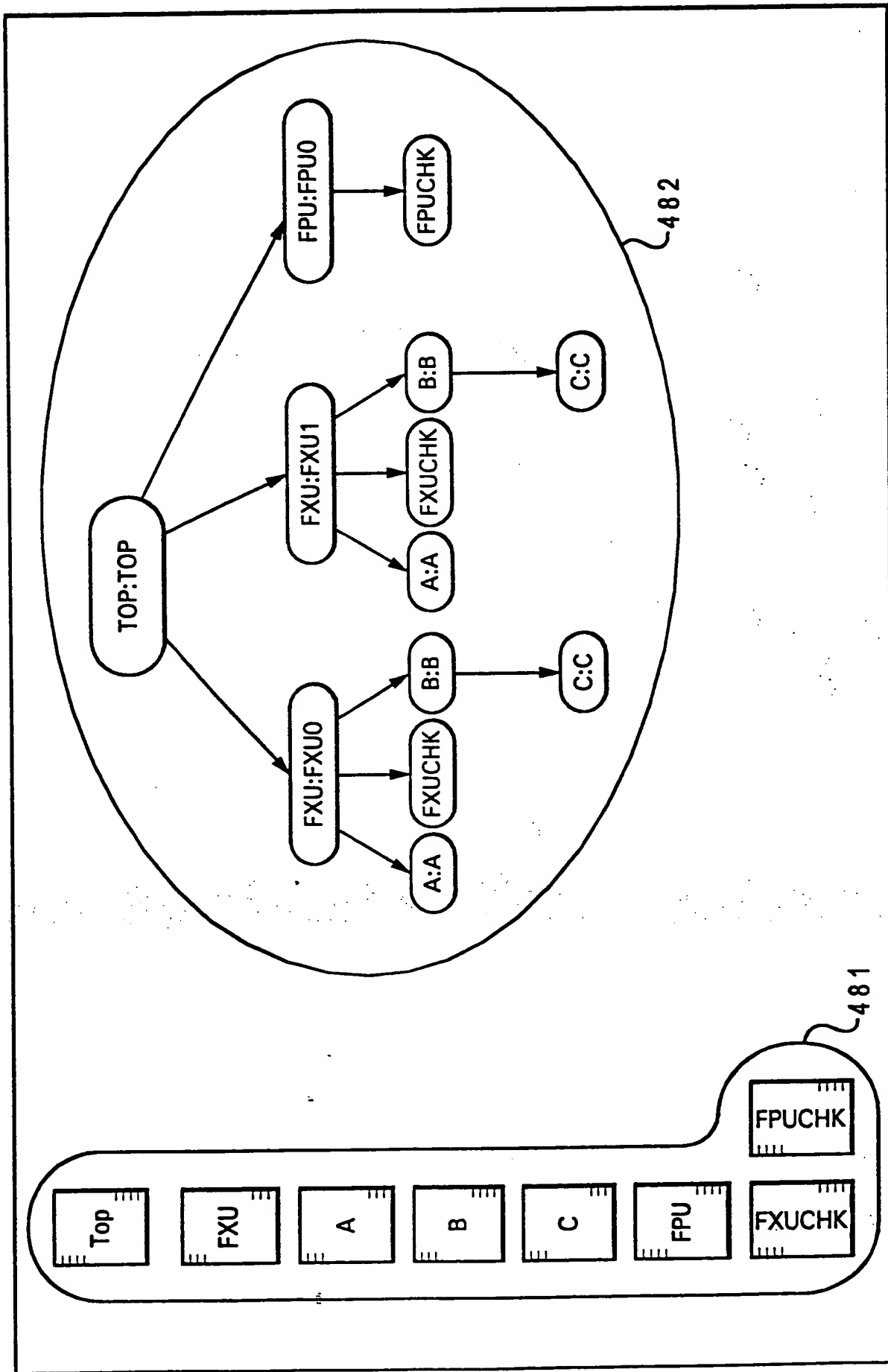
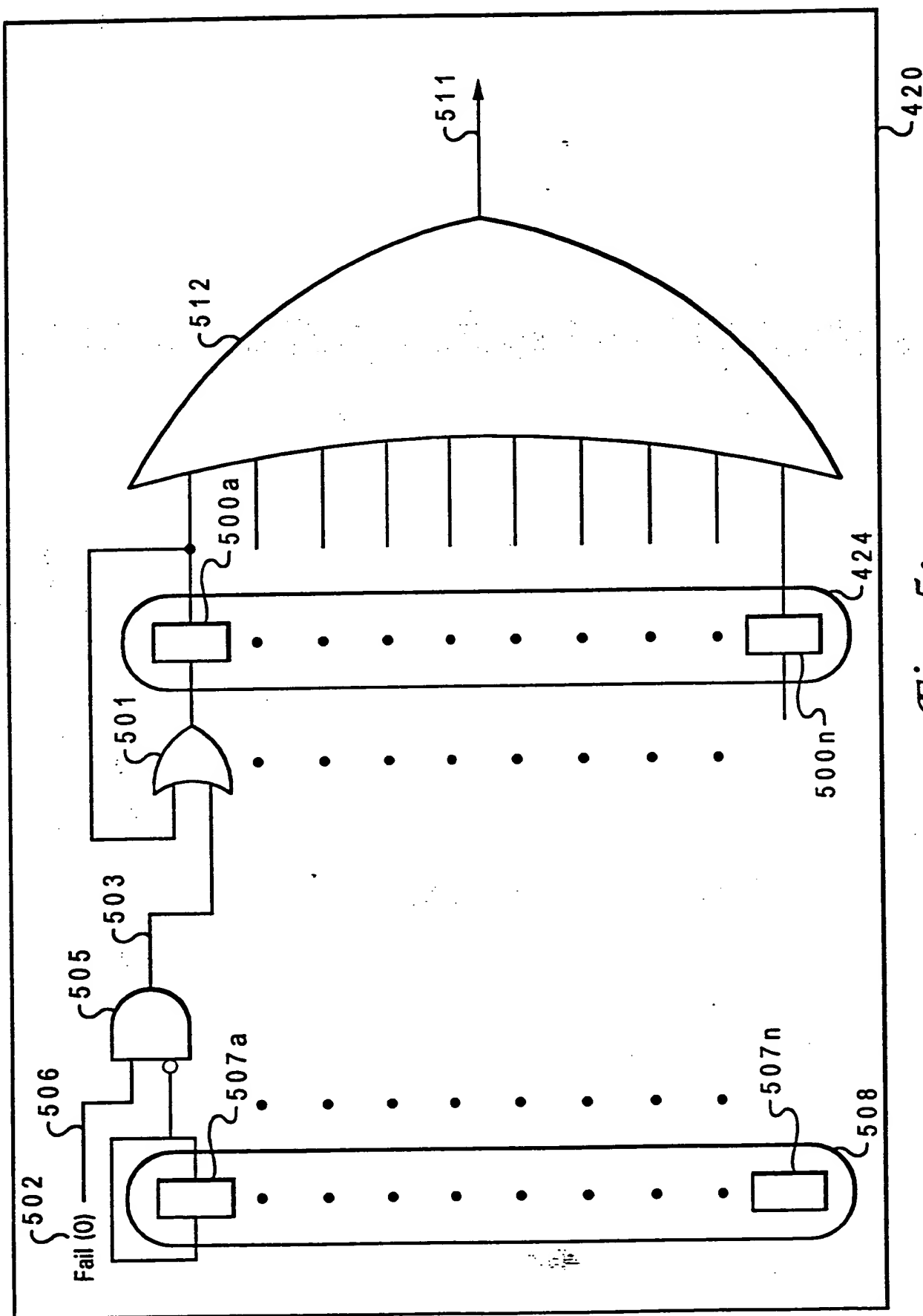


Fig. 4E



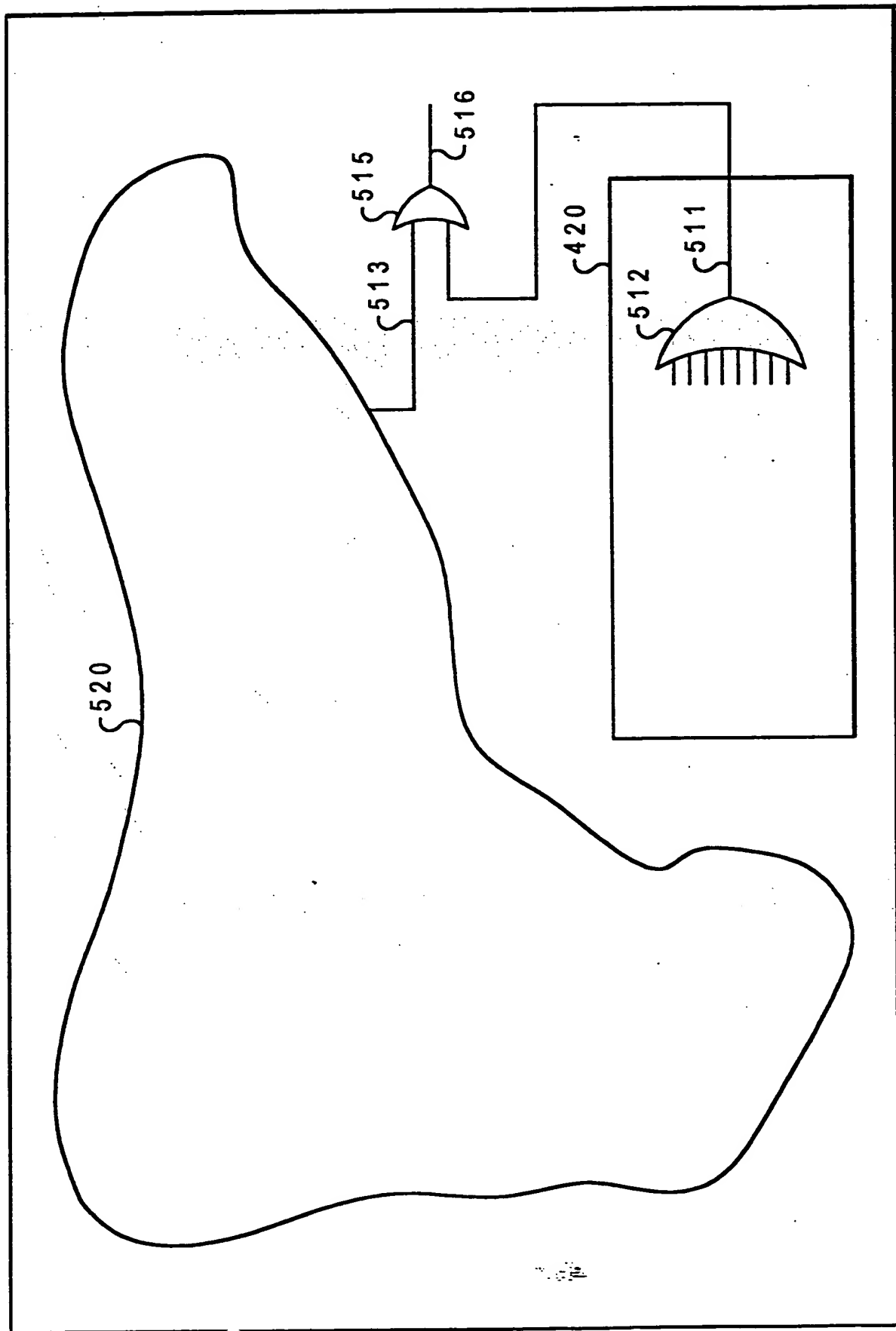


Fig. 5B

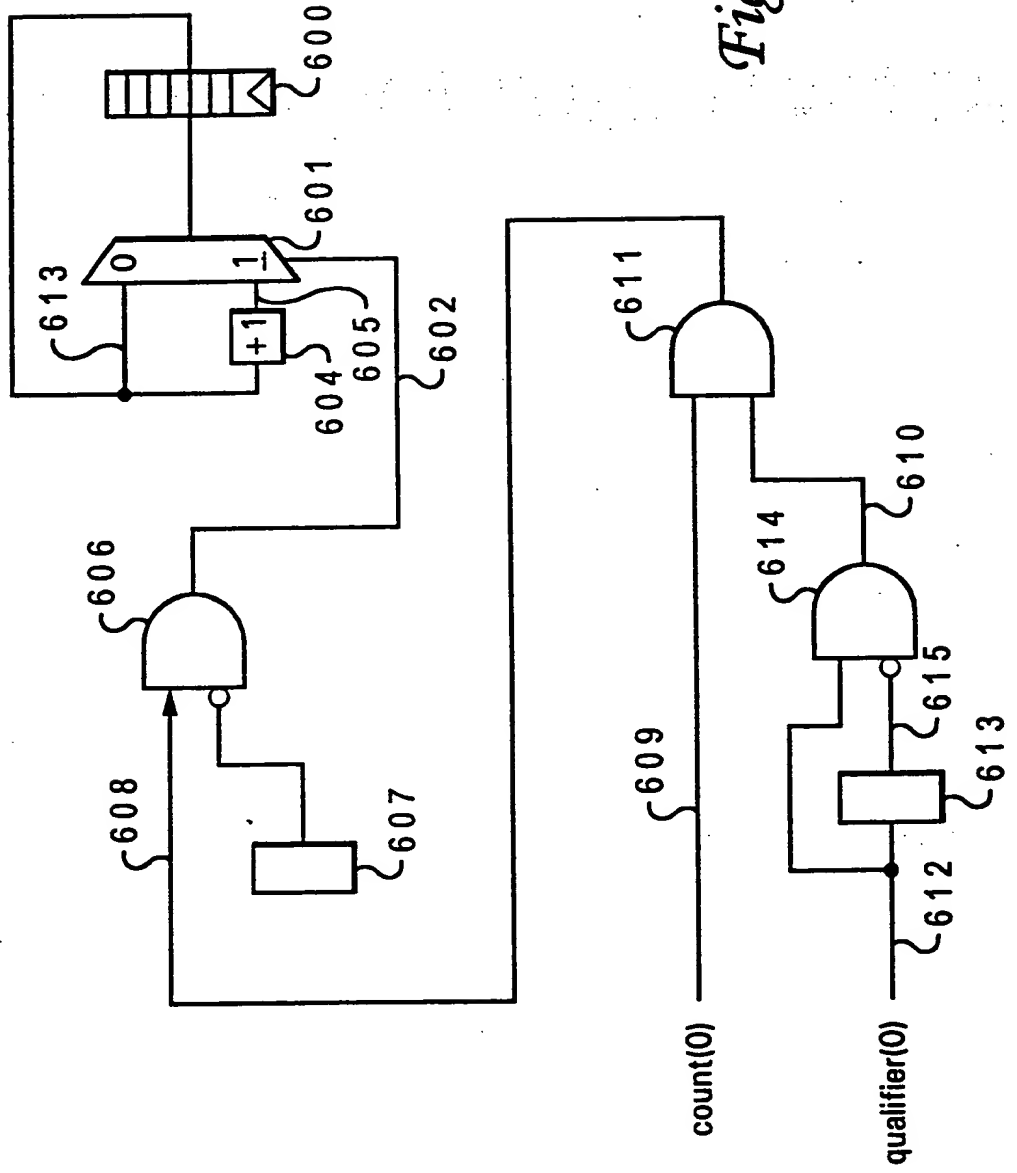


Fig. 6A

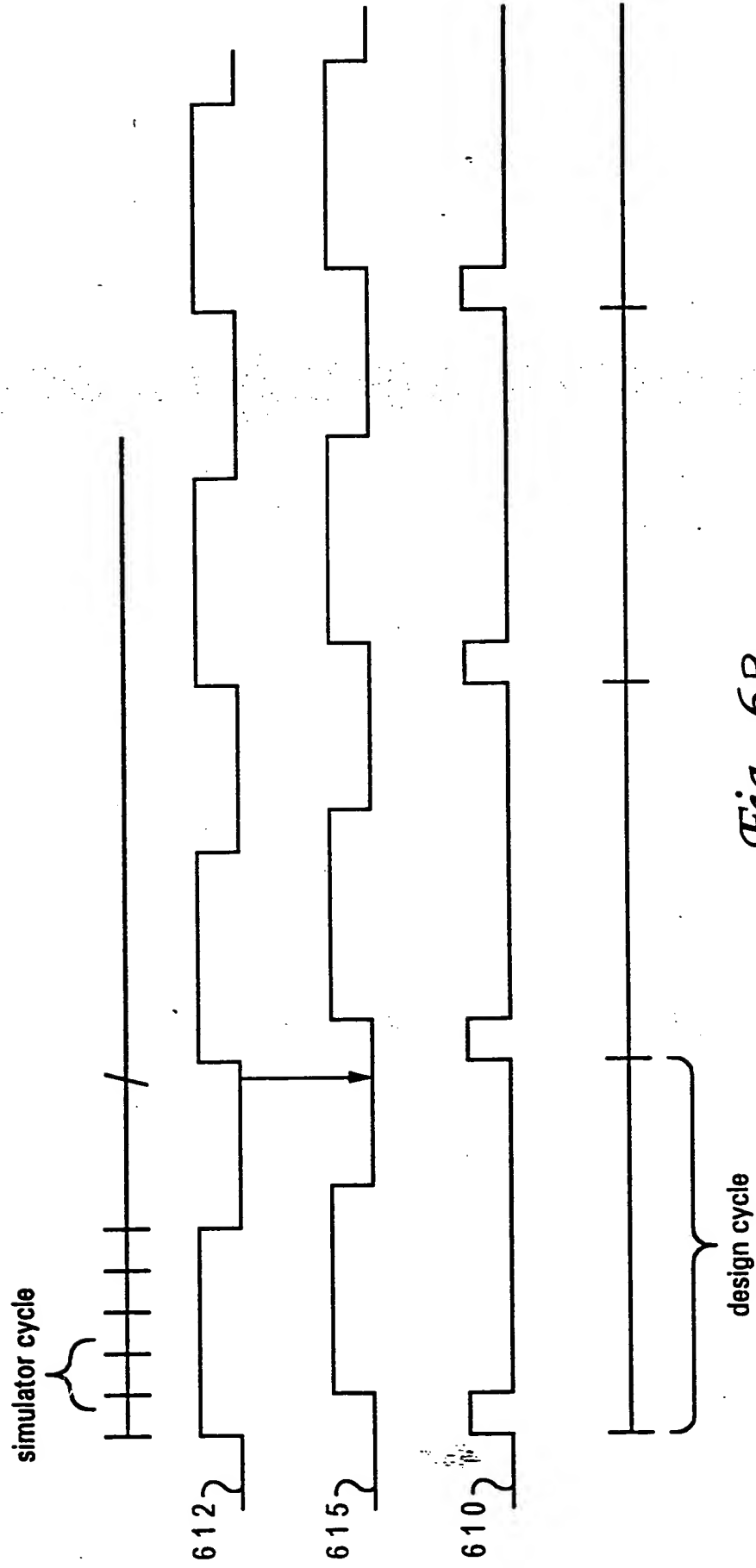


Fig. 6B

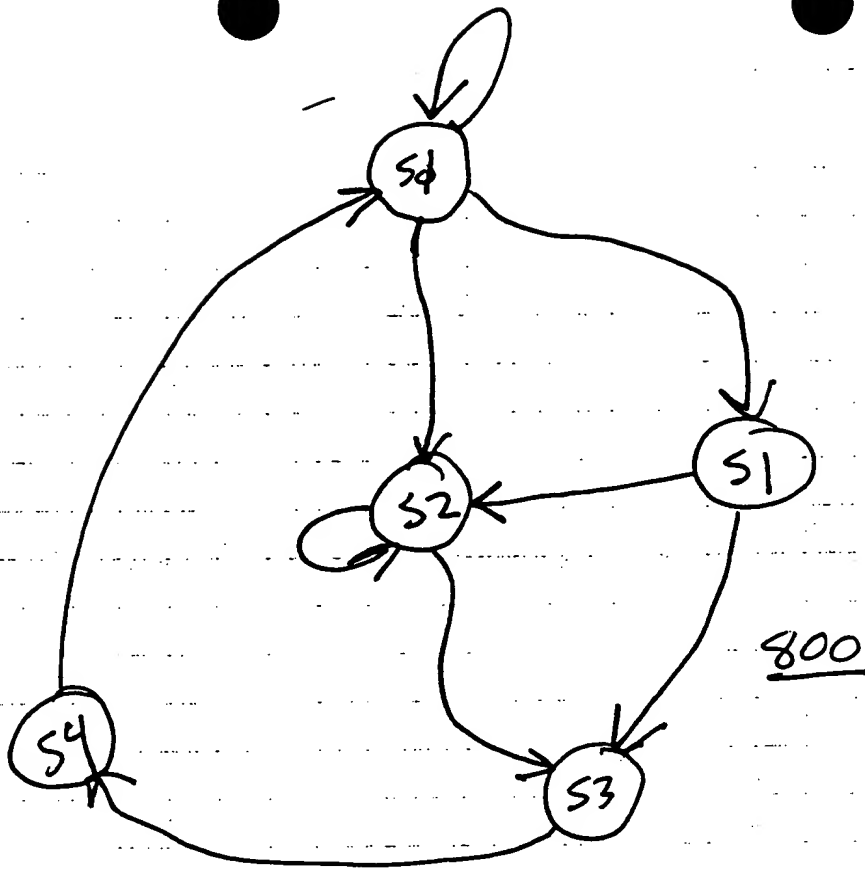


FIG. 8

(Prior Amt)

entity Fsm: Fsm

850

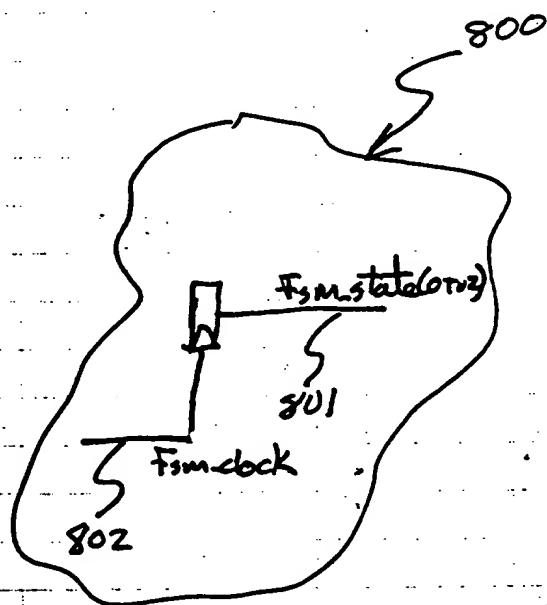


FIG. 8A
(Prior Art)

entity Fsm IS

PORT (

.... ports for entity Fsm

);

ARCHITECTURE Fsm of Fsm IS

BEGIN

.... HDL code for Fsm and rest of the entity. ...

fsm-state(0 to 2) <= ... signal 801

```
853 E --!! Embedded Fsm : exampleFsm;
859 E --!! clock          : (fsm_clock);
854 E --!! state_vector   : (fsm_state(0 to 2));
855 E --!! states         : (s0, s1, s2, s3, s4);
856 E --!! state_encoding : ('000', '001', '010', '011', '100');
857 E --!! arcs           : (s0 => s0, s0 => s1, s0 => s2,
                           s1 => s2, s1 => s3, s2 => s2,
                           s2 => s3, s3 => s4, s4 => s0);
858 E --!! end Fsm;
```

852

86

END;

FIG. 8B

entity FSM:FSM

850

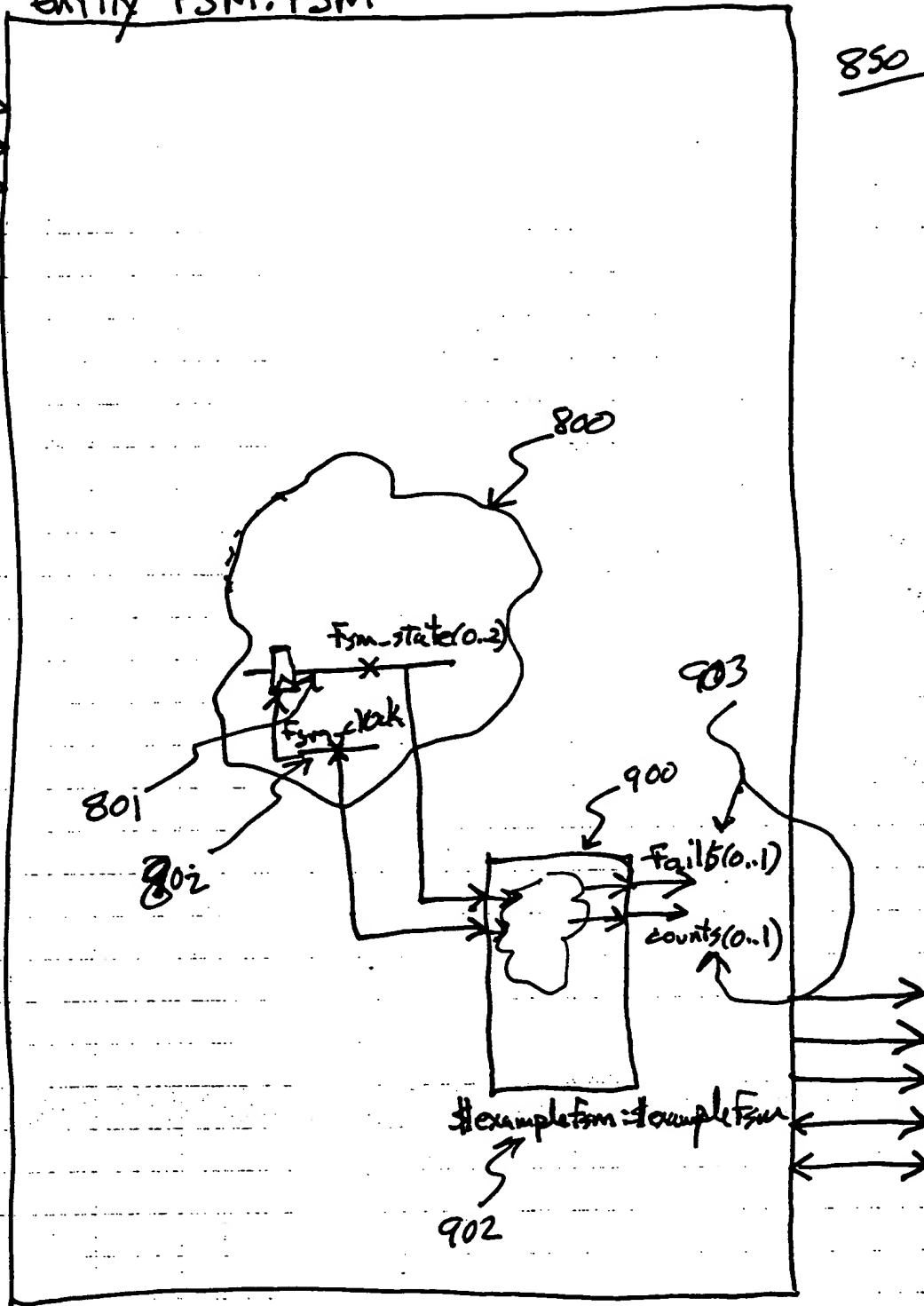


FIG. 9

TOP, TOP

1010a

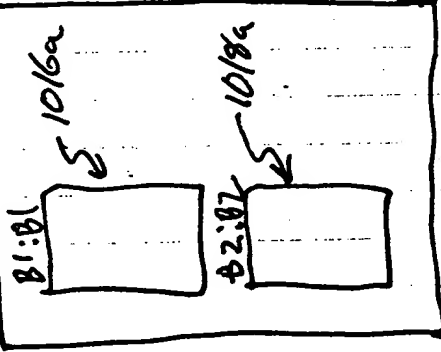
X:Y



1012a

1014a

Z:Z



1010b

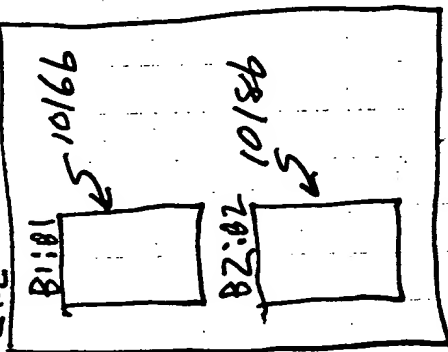
X:Y



1012b

1014b

Z:Z



1020

Y:Y



1022

Z:Z

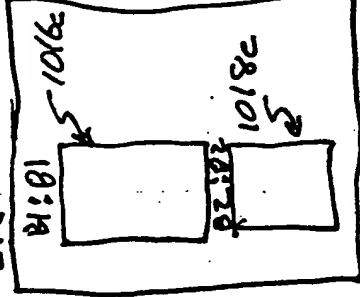
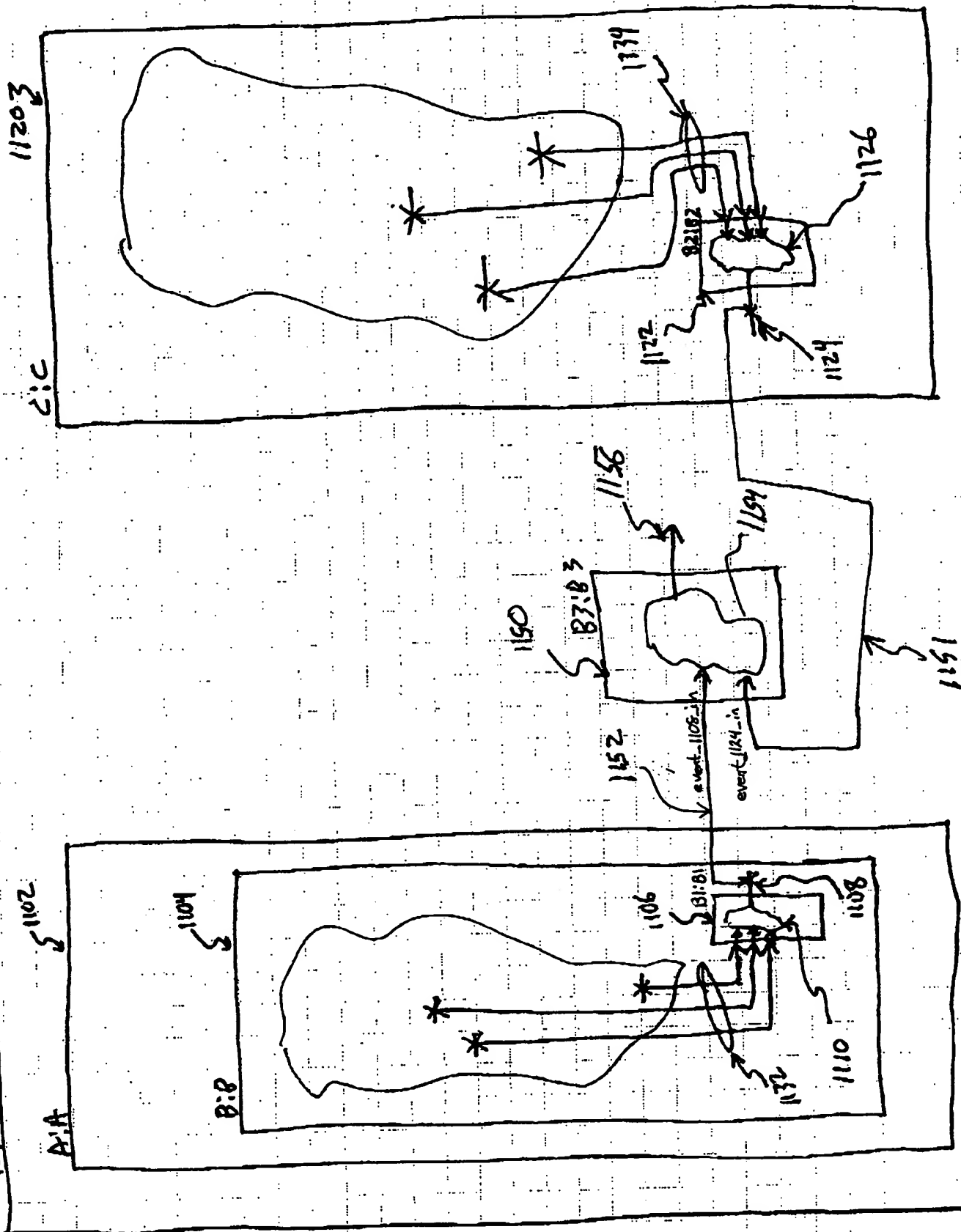


FIG. 10A

0976234-123000

top:top



1100

Fig. 11A

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